UNITED STATES PATENT AND TRADEMARK OFFICE

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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-13_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-13_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _10/18/06_.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

[1]   Claims 1, 2 and 5-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 1, the limitation (emphasis added) of "electronic digital image processing system incorporating (1) cognitive, (2) psychophysical, and (3) perceptual principles".

- Examiner requests the applicants to point out where and how in the specification such each of the incorporation is disclosed.

Regarding claim 2, the limitation (emphasis added) of "the processing algorithms and mechanisms re-parameterize input variables which correspond to physical properties of the ambient image array to graded category or concept variables corresponding to (1) perceptual principles, and (2) cognitive and (3) psychophysical prototypes".

- Examiner requests the applicants to point out <u>where and how</u> in the specification each of such re-parameterizing is disclosed.

Regarding claim 5, the limitation (emphasis added) of "<u>schema with hierarchical structure</u> is employed to <u>encode (1) perceptual hypotheses, (2) super-ordinate categories, (3) primary visual primitives, and (4) visual attributes.</u>"

- Examiner requests the applicants to point out <u>where and how</u> in the specification each of such encoding is disclosed.

Regarding claim 6, the limitation (emphasis added) of "<u>data derived by psychological survey methods, including (1) identification of typicality metrics, (2) prototypes, (3) relative ordinate designation</u>, and <u>(4) relative context within a data structure</u>, are used in the processing of digital image".

- Examiner requests the applicants to point out <u>where and how</u> in the specification each of such survey methods are disclosed.

Regarding claim 7, the limitation (emphasis added) of "<u>numerical data</u> are <u>re-parameterized</u> into <u>linguistic category data</u>".

- Examiner requests the applicants to point out <u>where and how</u> in the specification this is disclosed.

Regarding claim 8, the limitation (emphasis added) of "<u>a fuzzy perceptual inference</u> system is employed to <u>transform numeric data into linguistic data</u>".

- Examiner requests the applicants to point out <u>where and how</u> in the specification this is disclosed.

Regarding claim 9, the limitation (emphasis added) of "an image descriptor, comprising of <u>linguistic</u> and <u>numeric data</u> is used to describe a digital image and <u>organized relative to other variables designating ordinate position and corresponding level of human perceptual designation as well as world context, is used to provide perceptual decision-relative descriptions of a visual image</u>".

- Examiner requests the applicants to point out <u>where and how</u> in the specification this is disclosed.

Regarding claim 10, the limitation (emphasis added) of "<u>data derived by psychological survey</u> methods including **(1)** <u>typicality survey and</u> **(2)** <u>motor interaction studies is employed to construct schemas</u> that incorporate expert human knowledge.".

- Examiner requests the applicants to point out <u>where and how</u> in the specification this is disclosed.

[2]   Regarding claims 1 and 11 the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim 1 recites *inter-alia,* "accomplish processing functions **such as** color segmentation and grouping by similarities".

Claim 11 recites *inter-alia,* "level of processing <u>such as</u> ordinate level within schema

structure, perceptual schema, and human categorization".

[3]   Claim 2 recites the limitation "<u>the</u> processing algorithms and mechanisms" in line 1. There is

insufficient antecedent basis for this limitation in the claim.

[4]   Claim 11 recites the limitation "labels that associate <u>the</u> data with perceptual concepts" in

line 6. There is insufficient antecedent basis for this limitation in the claim. What data is associated

with labels, numeric or linguistic?

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Following is a quotation from MPEP 2106.IV.B.1(a) (emphasis added):

> **Data structures <u>not</u> claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer.** See, e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory.

[5]   Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-

statutory subject matter as set forth in MPEP 2106.IV.B.1(a). Adding the limitation of "stored on a

computer-readable medium" after "data structure" would resolve this issue.

Claim Objections

[6]   Claim 12 is objected to because of the following informalities: An independent claim cannot

depend on another claim, claim recites *inter-alia,* "query image descriptor that conforms to the

schema of claim 2". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

[7]   Claims 1-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Chu[i] et al. ("Chu").

Regarding claim 1, Chu meets the claim limitations, as follows:

An electronic digital image processing system *[fig. 6-15]* incorporating cognitive,

psychophysical, and perceptual principles *[fig. 6-1]*, comprising one or more pre-

processors *[fig. 6-15: inherently present]*, a processing engine *(i.e. program or software*

inherently present) with multiple processing units *(i.e. each layer)* each re-parameterizing

input variables *(i.e. raw images in RL layer)* to graded category variables *(i.e. TAH)* to

accomplish processing functions such as color segmentation and grouping by

similarities *[fig. 6-1; page 151, para. 2]*, a perceptual schema *(i.e. metadata)* database *[page*

149, para. 4], and an output generator that produces structured image data *[abstract:*

image and metadata is a structured image data].

Regarding claim 2, Chu meets the claim limitations, as follows:

The system of claim 1, wherein the processing algorithms and mechanisms re-parameterize input variables which correspond to physical properties of the ambient image array *(i.e. pixel in the raw image)* to graded category *(i.e. TAH)* or concept variables corresponding to perceptual principles, and cognitive and psychophysical prototypes *[fig. 6-1; page 149, para. 4; page 150, para. 2]*.

Regarding claim 3, Chu meets the claim limitations, as follows:

The system of claim 1, wherein the system processes digital images *(i.e. raw images)* in an adaptive fashion, with each processing unit *(i.e. layer)* making adjustments to the data in the schema *(i.e. metadata)* and adapting the data adjustments *(i.e. processed data is serves as input to the next layer)* made by other processing units in processing the digital image *[fig. 6-1; page 149, para. 4]*.

Regarding claim 4, Chu meets the claim limitations, as follows:

The system of claim 1, wherein the processing units *(i.e. layers)* are inter-dependent with each processing unit *(i.e. layer)* employing output from other processing units *(i.e. layer)* and provides output for use by other processing units *(i.e. layer)* in their respective processing function *[fig. 6-1]*.

Regarding claim 5, Chu meets the claim limitations, as follows:

The system of claim 1, wherein a schema with hierarchical structure *(i.e. layered metadata)* is employed to encode perceptual hypotheses, super-ordinate categories, primary visual primitives, and visual attributes *[fig. 6-1]*.

Regarding claim 6, Chu meets the claim limitations, as follows:

The system of claim 1, wherein data derived by psychological survey methods, including identification of typicality metrics, prototypes; relative ordinate designation, and relative context within a data structure, are used in the processing of digital image *[table 6-1; page 156, para. 3]*.

Regarding claim 7, Chu meets the claim limitations, as follows:

The system of claim 1, wherein numerical data *(i.e. pixel values)* are re-parameterized into linguistic category data *(i.e. TAH)* and organized within a perceptual schema *(i.e. metadata)* and an image descriptor *(i.e. filename inherently present)* *[page 150, para. 2; page 151, para. 2]*.

Regarding claim 8, Chu meets the claim limitations, as follows:

The system of claim 1, wherein a fuzzy perceptual inference system is employed to transform numeric data into linguistic data *[page 157, para. 2]*.

Regarding claim 9, Chu meets the claim limitations, as follows:

The system of claim 1, wherein an image descriptor, comprising of linguistic *(i.e. TAH)* and numeric data *(i.e. pixel value)* is used to describe a digital image and

organized relative to other variables *(i.e. metadata from SL layer)* designating ordinate

position and corresponding level of human perceptual designation as well as world

context, is used to provide perceptual decision-relative descriptions of a visual image

[fig. 6-1; page 150, para. 2 and 3; page 151, para. 2].

Regarding claim 10, Chu meets the claim limitations, as follows:

The system of claim 5, wherein data derived by psychological survey methods

including typicality survey and motor interaction studies is employed to construct

schemas that incorporate expert human knowledge *[table 6-1; page 156, para. 3].*

Regarding claim 11, Chu meets the claim limitations, as follows:

A data structure *(i.e. metadata)* for describing the perceptual data of the digital image

[fig. 6-1] comprising: numeric data that describe the digital image *[fig. 6-1; page 149, para.*

4; RL layer, image pixel data]; linguistic data that describe the digital image *[fig. 6-1; page*

149, para. 4; KL layer, TAH]; indices *(i.e. layer)* that identify the data with each level of

processing such as ordinate level within schema structure, perceptual schema, and

human categorization *[fig. 6-1; page 149, para. 4]*; and labels *(i.e. SR- spatial relationship)*

that associate the data *(i.e. TAH)* with perceptual concepts *(i.e. shape and spatial*

relationship) [fig. 6-1; page 150, para. 3].

Regarding claim 12, Chu meets the claim limitations, as follows:

A method of query processing in an electronic image retrieval system *[fig. 6-11]*,

comprising: receiving one or more query *(i.e. KEQL)* input describing the image in

linguistic terms *[page 172, para. 1]*; translating *(i.e. query planner)* the linguistic query

input *(i.e. KEQL)* into a query image descriptor *(i.e. query execution graph)* that

conforms to the schema of claim 2 *[page 172, para. 1]*; comparing the query image

descriptor to the image descriptor of images stored in a database *[page 176, para. 4]*;

and retrieving the image with image descriptor that most closely matches the query

image descriptor *[page 176, paras. 4 and 5]*.

[8]   Claims 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Person[ii]

Regarding claim 13, Person meets the claim limitations, as follows:

A method of analyzing visual information, comprising: an electronic spreadsheet that

accepts digital images and their image descriptors as input to its cells *[page 2, para. 1;*

page 35, para. 1]; means for reading the data in the image descriptors *[page 2, para. 1]*;

and formulas that operate on the data contained in the image descriptors *[page 15,*

para. 1].

Contact Information

[9]   Any inquiry concerning this communication or earlier communications from the examiner

should be directed to Mr. Sath V. Perungavoor whose telephone number is (571) 272-7455. The

examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor,

Mr. Matthew C. Bella whose telephone number is (571) 272-7778, can be reached on Monday to

Friday from 9:00am to 5:00pm. The fax phone number for the organization where this application

or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system,

see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system,

contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dated: March 13, 2007

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[i] Content-Based Image Retrieval Using Metadata and Relaxation Techniques
[ii] Special Edition Using Microsoft Excel 97